

Subject: Agricultural Air Quality Task Force

To: Dan Glickman, Secretary of Agriculture

We, a subcommittee representing the Agricultural Air Quality Task Force, have been asked by the full task force to share with you a summary of the research priorities related to agricultural air quality discussed at the Task Force meeting held June 17 and 19, 1997 in Fresno, California. Three primary areas of emphasis have been identified concerning air pollution regulations affecting agriculture, which include 1) particulate matter (PM), 2) ozone, and 3) agricultural odors. In order for you to be aware of the attitudes and concerns of the task force and as a guideline for future considerations by your office relative to agricultural air quality research issues, we respectfully submit the following.

Current agricultural air quality issues call for additional knowledge and understanding beyond that which currently exists. There is a need to better understand the contribution, both beneficial and detrimental, agricultural activities have on air quality.

Research priorities related to air quality regulations of particulate matter.

Current knowledge does not fully describe particulate matter emissions from agricultural practices. To understand better the particulates (particle size distribution, speciation, etc.) emitted by wind blown dust, agricultural burning, field operations, agricultural processing, and non-road engine emissions, the following topics need expanded research support.

- * Improved sampling methodology, including statistical procedures, and development of testing and monitoring equipment, to assure accuracy and reliability.
- * Determine methodologies to speciate PM (e.g. distinguishing agricultural sources of PM from non-agricultural sources).
- * Determine the contribution of agricultural activities (agricultural burning, processing, non-road engine emissions, field activities, and wind erosion) to ambient levels of PM-2.5 and PM-10.
- * Determine the contribution of soil, organic matter, and crop residues (agricultural particulates) to PM-2.5 and PM-10.
- * Development of accurate PM (particulate matter) emission factors from agricultural activities.
- * Improved dispersion modeling methodology including deposition and transport.
- * Encourage EPA to establish a clearer definition of the relationship of agricultural source particulates and public health risks.
- * Determine the economic and technological feasibility of air pollution control strategies for compliance with the Clean Air Act and State Implementation Plan (SIP) requirements, National Ambient Air Quality Standards (NAAQS) and regional and local air resource standards.

Research priorities related to air quality regulations of ozone.

Ground level (tropospheric) ozone at certain concentrations can suppress crop yield. However, current knowledge is not sufficient to quantify effects on productivity on a national basis accurately. In order to estimate the consequences and regulatory control options of ozone pollution, the following topics require expanded research support.

- * Determine/monitor ozone levels in rural areas and determine the contribution of anthropogenic and non-anthropogenic (biogenic) sources of NO_x and reactive VOC's.
- * Economic assessment of ambient ozone effects on crop production, including costs to agriculture from control measures as well as benefits from reduction of ambient ozone concentrations.
- * Determine the effects of ozone on plant response to disease and pests.
- * Determine the influence of environmental variables on ozone impacts including factors affecting ozone flux to plants (uptake).
- * Determine the effects of agricultural activities and rural areas as to their role(s) in sequestering and producing NO_x and reactive VOC's.
- * Develop and validate models to predict ozone effects on crop productivity, including statistical, economic, and plant growth process models.

Research priorities related to air quality regulations of agricultural odors.

Agricultural odors remain a complex issue with both a measurable component based on the presence of small amounts of specific gas molecules and a more subjective component based on individual sensitivity. Support for expanded research activities is needed to fill the gaps between technology development and the needs of agricultural producers and the public. Expanded research support is required in the following areas to better identify and measure odors, determine the relationship between odorous compounds and the environment, identify human response to odors, and identify economical control methods and reduction strategies.

- * Determine the chemical and physical properties of odor including odor production processes, interaction of environmental variables, odor release pathways, interactions among odorants, and kinetics.
- * Determine odor sources from agricultural production and the impact of design and management practices on odor release and transport.
- * Development and implementation of economically and technologically feasible odor control and reduction strategies.
- * Improved dispersion modeling methodology including odor release, transport, and receptors.
- * Standardized measurement methodology, technologies and devices for odor detection including frequency, intensity, duration, and offensiveness.

We appreciate your support of the Task Force on Agricultural Air Quality Research. We express our sincere appreciation for this opportunity to participate with you in this very important agricultural issue.

USDA Agricultural Air Quality Task Force Subcommittee:

James Trotter--Co-chair	Joe Miller
Michael Veenhuizen--Co-chair	Dennis Tristao
Keith Saxton	Phillip Wakelyn
Calvin Parnell	Clinton Reeder